R·I·T Title: Olympus MX50 Microscope

Semiconductor & Microsystems

Fabrication Laboratory **Revision: B** **Rev Date: 08/29/2011**

Approved by:

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Process Engineer Equipment Engineer

1 INSTRUCTIONS

1.1 Location and Use of Microscope Controls

Control	Location	Use
Main Power	Back lower left.	Turn on power to microscope.
Intensity	Front bottom.	Adjust illumination.
Lens select pad	Separate unit	Automatically changes magnification lens.
Microscope/TV View	Top of right side.	Switch between microscope or microscope and TV view.
Polarizer	Top of right side.	Used with Nomarski Mode.
Analyzer	Top of right side.	Used with Nomarski Mode.
Bright Field	Front right side.	Provides uniform illumination. Good for everyday viewing.
Dark Field	Front right side.	Provides illumination at a glancing angle.
Centering knobs for field diaphragm	Back right and left.	Adjusts position of field diaphragm.
Field Diaphragm	Right side.	Changes the size of the field of view.
Aperture Diaphragm	Top left side.	
Nomarski Adjustments	Front near the lenses.	Reveals surface defects and microstructure.

1.2 Nomarski Mode – The Nomarski Mode is used to enhance the contrast of certain features and is good for revealing surface defects and microstructure.

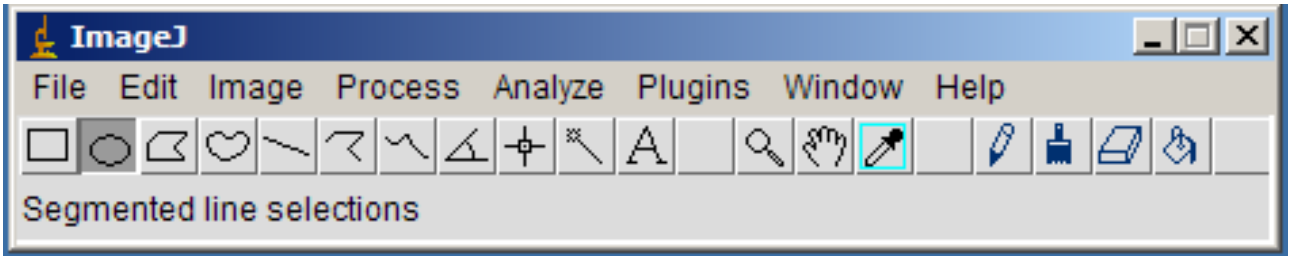
1.2.1 Magnification must be 50X or greater to use Nomarski mode effectively.
1.2.2 Make sure the **Polarizer** and **Analyzer** on the top right side are in.
1.2.2 Adjust the intensity.
1.2.3 Use the Nomarski controls to optimize the image. As the knob is turned, the image will change color allowing certain features to be highlighted.

1.3 Taking Pictures

1.3.1 Log on the computer with your DCE account.
1.3.2 Open the **Osprey Swiftcap** software. Select **Start Preview** from the toolbar. (blue button)
1.3.3 On the upper right hand side of the microscope make sure it is set for **Microscope and TV View**. The picture should appear on the monitor behind the scope.
1.3.4 The intensity should be adjusted to give a good picture on the screen.
1.3.5 To capture a picture select **CTRL P** on the keyboard. Give the file a name, type and location.

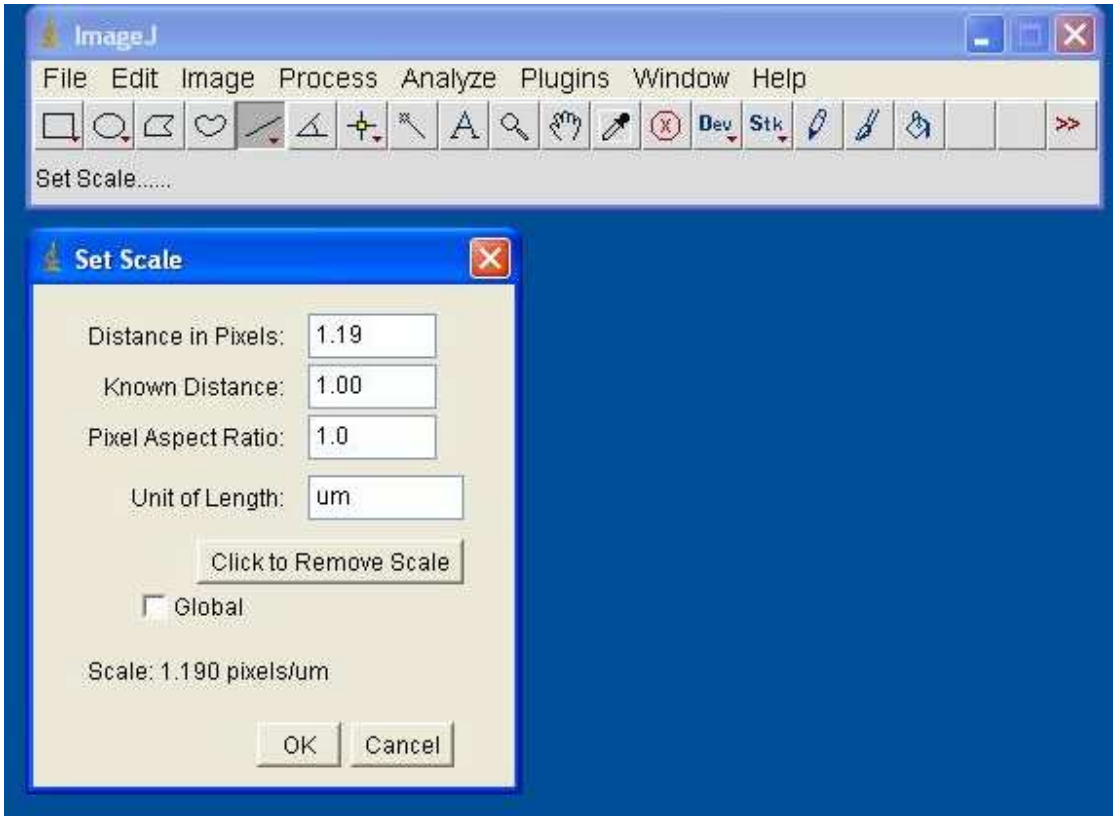
1.4 Using the Measurement Software

1.4.1 Open the **ImageJ** software. It is also available free on the internet for use on your own computer.



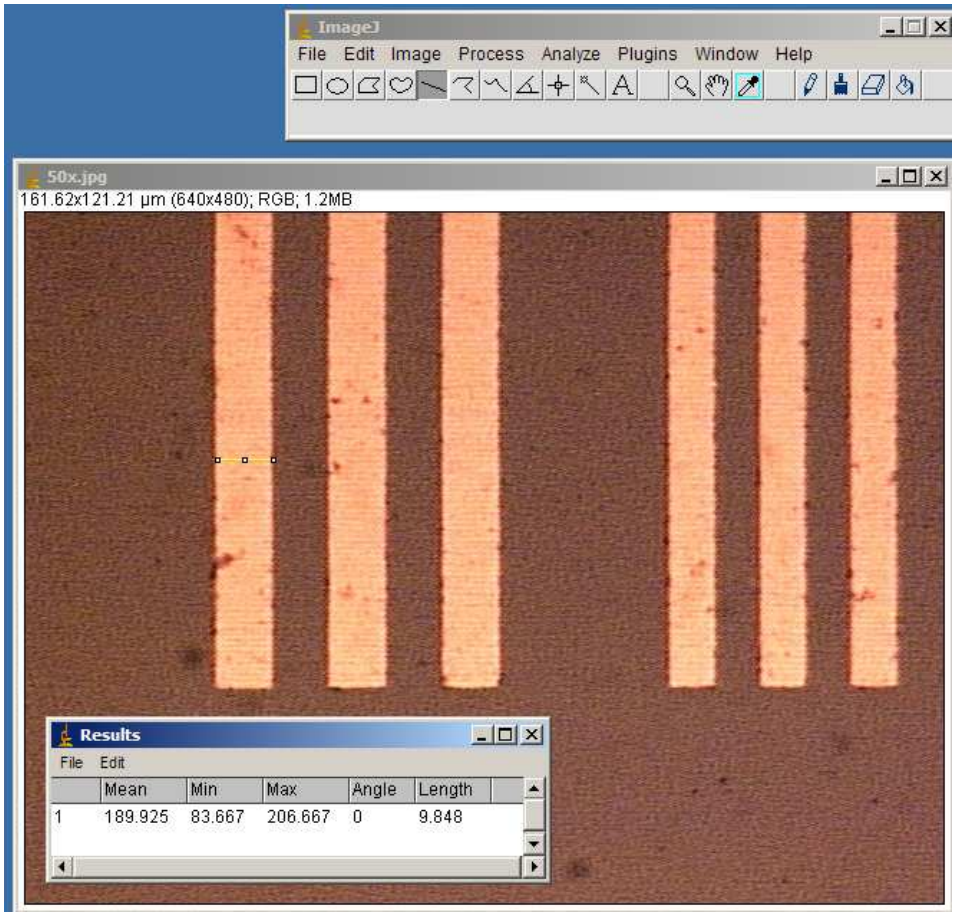
1.4.2 Under **File** select **Open** and then select a saved picture.
1.4.3 Under **Analyze** select **Set Scale** and enter in the following, depending on the microscope lens.

Microscope Lens	Distance in Pixels	Known Distance	Pixel Aspect Ratio	Unit of Length
5x	0.4	1.00	1.0	um
10x	0.8	1.00	1.0	um
20x	1.6	1.00	1.0	um
50x	4.0	1.00	1.0	um
100x	8.0	1.00	1.0	um



1.4.4 On the **ImageJ** toolbar select the button with the shape or line you want to measure. Use the line to measure line width and the box to measure area.

1.4.5 On your picture use the mouse to draw a line to measure line width or a box to measure area.



1.4.6 Under **Analyze** select **Measure** to display the results.

REVISION RECORD

Summary of Changes	Originator	Rev/Date
Original Issue	Kelly Johnson	A-10/19/2010
Updated to reflect installation of Osprey Swiftcap. Corrected pixel distances	Sean O'Brien	B- 08/29/2011